

Food Safety Knowledge and Practices of Floating Food Vendors in Damnoen Saduak Floating Market, Thailand

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Abstract— Food hygiene knowledge and practices of floating food vendors in Damnoen Saduak Floating Market was investigated. Data was collected from thirty vendors using a structured questionnaire and an observational checklist. Few (10%) vendors acquired the knowledge of food safety by formal training. The results suggest that although most floating food vendors have knowledge of some aspects of food safety and practices, several gaps remain, posing a serious health hazard to consumers. The main problems were the infrequency of hand washing, the storage of cooked food uncovered and the accumulation of waste near the point-of-sale. It is important that vendors should be supported through additional hygiene training and routine inspections be conducted to ensure that appropriate knowledge is acquired and effectively applied. The code of practice for vendors should be developed with a view to improve food safety in floating market food operations.

Keywords— Floating market, food safety, hygiene, sanitation

I. INTRODUCTION

Damnoen Saduak Floating Market is one of the famous and attractive places to see traditional way of food and goods trade in Thailand. It is located at Damnoen Saduak District, Ratchaburi Province. Like other floating markets in Thailand, food is definitely one of the highlights of a trip to Damnoen Saduak Floating Market.

The major advantage of being floating food vendors is the accessibility to the buyer. On the other hand, hygiene is the weak point due to several factors such as trading features, characteristics of the foods sold and hygiene surveillance, which increase concerns about the safety of vended foods.

Currently, food sanitation laws and regulations do not provide any specific standards with which floating food vendors need to comply to carry out their activity. They are not regulated and operate haphazardly without any monitoring of hygiene practices.

Diarrheal diseases have been considered the major public health problem in Thailand [1]. There are approximately more than 120,000 cases of reported food poisoning cases every year [2]. Unhygienic food

handling of the floating food vendors may cause pathogens to come into contact with vended foods and cause foodborne diseases. The purpose of this study was to investigate the current hygiene knowledge and practices of floating food vendors in Damnoen Saduak Floating Market.

II. MATERIALS AND METHODS

Thirty floating food vendors in Damnoen Saduak Floating Market, Ratchaburi Province, Thailand were interviewed on-the-spot by using a structured questionnaire and an observation checklist. The questionnaire was divided into five parts: (i) profile of the vendors; (ii) knowledge about diarrhea and food contaminants; (iii) health and personal hygiene; (iv) food handling; (v) waste management. The hygienic practices and personal hygiene were also observed and recorded by using the observation checklist. The survey was conducted in August, 2011. Data was analyzed by using the Statistical Package for Social Science (SPSS) version 17.0. Descriptive statistics were used to present the findings.

III. RESULTS AND DISCUSSION

A. Profile of Floating Food Vendors and Vended Food in Damnoen Saduak Floating Market

Only 10% of the respondents in this study had acquired formal food sanitary training. Food vendors should be adequately educated on the food safety [3]. There were various types of floating food vended at Damnoen Saduak Floating Market. About 37% of the food vendors sold fresh fruits such as mango, pomelo, rose apple, coconut, guava, star fruit and durian. Other vendors sold Thai dessert, Pad Thai, pork satay, spring roll and papaya salad (17%, 7%, 7%, 7% and 3%, respectively).

B. Knowledge about Diarrhea and Food Contaminants

More than 90% of the vendors knew the symptom of diarrhea as passing of more than three liquid stools a day. Only 3% of the vendors did not have any knowledge about

diarrhea. Majority of the respondents (93%) were aware that all the five factors namely; dirty food, dirty water, dirty hands, dirty utensils, and animals as risk factors for the transmission of pathogens causing diarrhea.

The results revealed that all of the vendors were aware that invisible germs in foods and hairs as food contaminants. However, only one-tenth of the vendors considered that food colorings, flavorings and spices used in food preparation and preservation can contaminate food.

C. Health and Personal Hygiene

More than 85% of the vendors agreed that fever, diarrhea, vomiting, and stomach cramps may make them stop vending temporarily.

All of the vendors agreed that bathing must be done regularly and they should wear clean clothes, aprons and hair nets. However, it was observed that 80% of the respondents did not wear aprons, 37% had worn jewelry, 27% did not wear hair restraints, and 23% had dirty nails. Avoiding the use of adornments of any type is also an essential measure in good practices of personal hygiene [4].

Hand washing is a simple and effective way to cut down on cross contamination. Hand washing practices of the floating food vendors are presented in Table 1. From the survey it was observed that none of the vendors washed hands after handling money.

The hands of food handlers can be vectors in the spread of foodborne diseases due to poor personal hygiene or cross contamination [5]. The vendors should avoid handling money and if this is unavoidable, the vendors should clean hands after touching money and before handling food again. Food handlers should wash their hands with soap and water after engaging in any activities that are likely to introduce biological, chemical or physical hazards (e.g. after handling raw foods of animal origin, after using the toilet, after handling unsanitary objects such as garbage containers, after touching animals, and after

contact with toxic substances such as pesticides and disinfectants) [6].

TABLE I

HAND WASHING PRACTICES OF FLOATING FOOD VENDORS IN DAMNOEN SADUAK FLOATING MARKET

Topics	Number of Responses (n=30)	%
Source of water for hand washing		
Tap water	21	70
Canal water	7	23
Gallon water	2	7
Hand washing requirements		
Clean water	30	100
Soap	30	100
Clean hand towel	27	90
Disinfecting solution	2	7
Reasons for hand washing		
After using the toilets	30	100
Handling garbage	30	100
Blowing of nose	24	80
After eating meals	21	70
Scratching	21	70
Handling money	20	67
Handling raw foods	11	37
Smoking	8	27
Continuous food handling	2	7

E. Food Handling

Results of the survey showed that the vendors knew that it was unsafe to use unclean raw materials. All of the vendors agreed that they should wash vegetables before cooking. Most of them (87%) refused to use cooking oil repeatedly. Additionally, 80% of the vendors recognized that the use of the same cutting board for raw and cooked food of animal and vegetable origin without thorough proper washing could be one of the cases of food poisoning.

Majority of the respondents (90%) used tap water for preparing and cooking food. More vendors (77%) cooked their food during sale and only 37% reheated the food before serve. These cooked food were reheated a few minutes for consumers anytime during the day. Moreover, 60% of the vendors stored cooked food in uncovered containers and 43% of the vendors handled cooked food with bare hands.

If cooking and reheating are inadequate, bacterial contaminants can multiply. If food cannot be served immediately, it should be kept or maintain within the safety temperature of at least 70°C before eating. This is to make sure that the foods may not act as incubator for microbes whether the food is partially cooked or fully done [7]. Clean utensils such as tongs, spoons or forks should be used when handling cooked food. Handling with bare hands may results in cross contamination, hence introduction of microbes on safe food [8].

F. Waste Management

It was found that 97% of the floating food vendors had at least one waste container. In actual practice, wastes were accumulated in open receptacles (plastic bags or trash bins). The receptacles were placed in their boats or near their vending areas. The wastes were usually disposed of at the end of the day. The vendors did not cover trash receptacles thus attracting flies and other insects creating the possibility of contamination of cooked food [9].

Of the vendors who did not have garbage receptacles, they disposed their garbage in the canal. It was found that many of floating markets in Thailand suffered from environmental problems. The problems were caused by waste in the canal [10].

VI. CONCLUSIONS AND SUGGESTION

The results of this study suggest that although most floating food vendors have knowledge of some aspects of food safety and practices, several gaps remain, posing a serious health hazard to consumers. The main problems were the infrequency of hand washing, the storage of cooked food uncovered and the accumulation of waste near the point-of-sale. It is important that vendors should be supported through additional hygiene training and routine inspections be conducted to ensure that appropriate knowledge is acquired and effectively applied. The code of practice for vendors should be developed with a view to

improve food safety in floating market food operations.

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